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SOME ISSUES IN THE TEACHING OF HANDWRITING. I

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The purpose of this article is to present some of the most important issues of the pedagogy of handwriting, and to discuss the psychological processes which may be appealed to for their solution. Psychological analysis cannot finally determine practical questions of this sort. It can, however, define the issue and lead to conclusions which may then be tested by means of practical experiment in the schoolroom. The discussion, therefore, does not aim to give a final settlement of these questions, but rather to offer tentative solutions and to lead to practical school experiments.[1]

I

The question in the pedagogy of writing which has been most widely agitated is probably that in regard to the slant of writing. A brief history of this agitation may be given.

Previous to the agitation for vertical writing which took place in the last quarter of the nineteenth century, rapid writing slanted, as a rule, to the right. There had been, it is true, some suggestions looking toward the adoption of vertical writing, but they did not have general influence until about 1875. What divergence there was, was due to an opposition between the aim of speed, which led to a slant in writing, and the aim of legibility without regard to speed, which led to a more vertical style. At about the time

[1] A more detailed account of the methods by which such practical investigation of writing problems may be made in the school will be published in a forthcoming number of the *Journal of Educational Psychology*.

mentioned, however, a number of physicians of Germany and France criticized the writing in the schools from the point of view of hygiene. In order to understand the basis of their criticisms we must realize that the pupil commonly took a position with his side toward the desk. This was held to cause curvature of the spine and eye-strain. The curvature of the spine was due to the fact that only the right elbow rested upon the desk, with the consequence that the right shoulder was lifted higher than the left. The eye-strain was due to the fact that the eyes were not at an equal distance from the writing, and that the lenses of the eyes had to be focused unequally.

In order to remedy these evils it was seen to be necessary to modify the position of the pupil at the desk, and it was concluded that this would require also that the writing be vertical. The demands of these investigators are well represented by the resolutions adopted by the Society of Public Medicine of France in 1879. This society recommended, first, that the pupil sit squarely on the chair, with the weight equally distributed, the shoulders parallel to the edge of the desk, and the back erect; second, that he preferably do not rest his elbows on the desk, but that if he does they should rest equally on the desk; third, that he should hold the paper in place with his left hand; and fourth, that vertical writing be adopted, but if not that the paper be inclined to the left to the same degree by which the writing inclines from the vertical. We see clearly then that vertical writing was regarded as a necessary consequence of the reform of the evils above mentioned.

It should be added that vertical writing has also been regarded as more legible than writing which has a slant, and as therefore preferably both from the point of view of the writer and of the reader. This consideration may be taken up separately.

The main arguments for vertical writing have been met in common practice by a modification of the position of the pupil at the desk. The pupil may sit directly facing the desk and still write either vertically or with a slant. The question of slant is to be decided not primarily upon the score of hygiene, then, but upon the score of ease and rapidity of movement and of the legibility

of the resulting writing. We may take up the question of ease and rapidity of movement first.

The hand writing movement is made up ordinarily of a combination of arm and finger movement. To what extent the arm movement should be used is open to discussion, but at any rate it should co-operate to the extent of carrying the hand freely along the line. This it cannot do with the paper in the position which is commonly used for vertical writing, that is, with the paper parallel to the edge of the desk. In this position it is necessary that the arm be continually drawn back in order to avoid running off the line. In order then to make use of this valuable element of the writing movement, it is necessary that the paper be tilted to the left so that the base line of writing is about perpendicular to the forearm.

We have next to inquire what this position implies as to the direction of the main downward strokes of the letters, or, in other words, the slant of the writing. The fourth recommendation of the French society offers the solution to this question. It is found by experiment that the most natural direction for a downward stroke is toward the body, that is, in a line perpendicular to the edge of the desk when the writer sits facing it. If now the paper is parallel to the edge of the desk the writing will be vertical, but if it is inclined to the left the writing will be inclined to the right to the same degree. We have then the slant of the writing determined by two factors, first, the direction of the easiest movement of the arm in carrying the hand along the line, which determines the position of the paper, and second, the most natural direction of the downward stroke, which determines the direction of the downward strokes with reference to the paper.

There is, however, another consideration which favors some slant in writing. It has been remarked that historically rapid writing always tended to have more or less slant. This is not due in the main to the relative position of the arm and the paper, as just described, since this in all probability was not uniform but to the fact that as writing becomes rapid the different strokes of the letters tend to assume the same or nearly the same direction. It may readily be seen that it requires a more radical adjustment in

the movement to make a succession of strokes alternating between a vertical stroke and one having a considerable slant than it does to make a series in which the downward stroke has a slant which is more nearly like that of the upward stroke. That is, the more nearly the successive strokes resemble each other in direction, the more quickly they can be made. Since the connecting strokes between the letters have a slant, naturally the downward strokes tend to approximate this slant.

It is evident that the question of legibility is intimately connected with this question of the relative direction of the upward and downward strokes. If the downward strokes incline so far as to have nearly the same slant as the upward strokes the different strokes become less easily distinguishable and consequently the writing becomes less legible. The maximum of legibility in so far as the directions of the strokes is concerned is attained by having a maximum difference in direction between the successive downward and upward strokes. This is attained by vertical writing and hence vertical writing is theoretically the most legible.

The theoretical advantage of vertical writing in legibility is not necessarily maintained in practice. It is an acknowledged truth that actual writing does not conform to the copy-book model. The degree of deviation from the theoretical model will depend to a large extent upon whether or not the writing conforms to the requirements for ease and rapidity of movement. Since vertical writing does not so conform it tends, when there is pressure for rapid writing, to depart from the model and to become illegible. One common way in which this happens is for the upward strokes, as well as the downward strokes, to be vertical and to be connected with the previous and succeeding downward strokes by semicircular curves. Thus the upward and downward strokes may here, as in writing which has a slant, approximate one another in direction, and the result for legibility is as disastrous in the one case as in the other.

The difference in the legibility between the theoretical model for vertical writing and for writing which has a moderate slant is not great enough to be of any importance. Writing only suffers

in legibility when the slant becomes extreme and this condition is not found in present-day writing.

The psychological analysis then justifies the practice, which has been adopted by the majority of schools, of teaching writing which has a moderate degree of slant. The change has taken place largely as a result of unsatisfactory experience with the vertical writing. Changes which are made in this way, however, have not the same guarantee of stability as changes which are made with the consciousness of the psychological basis which underlies them. It is therefore of importance to determine the reasons why vertical writing was unsatisfactory in practice, and why writing with a slant is satisfactory.

II

We have now to consider a group of questions in the teaching of writing which may be described in general as growing out of the issue between the analytic and the synthetic method. The analytic method consists in training different processes or capacities simultaneously, and the synthetic method refers to the procedure of training different capacities one at a time. An example of the difference between these two methods is found, for instance, in reading. The analytic method is the so-called word or sentence method, in which the child first learns the whole and then proceeds from the whole to the parts. The synthetic method starts with the individual letters or the phonetic elements, and from these builds up the words and sentences. This general distinction between analytical and synthetic methods appears also in the teaching of writing.

The first question in this connection is in regard to the relation between the training for habits of movement and training for the production of correct form. That is, should the teacher aim from the beginning to train the child in correct habits of movement, and at the same time to train him to produce letters which are legible and correctly formed? The alternative is to lay stress first upon one of these aims and then after the first has been attained to emphasize the second. The consideration in favor of maintaining both of these aims together is that thereby we avoid the waste which results from a repetition, and from the necessity of undoing

bad habits. That is, so long as the child is practicing, it would seem to be economical to require him to learn to use the best form of movement and to produce correct form at the same time. Economy, then, is the advantage of this form of procedure. On the other hand, this argument neglects the psychological conditions of learning. The child is capable of paying attention to only so much at once, and if we require him to distribute his attention too widely the result will be that he will neglect both elements of the task which he is performing. Accordingly, instead of training both the form and the movement at the same time, the result is that neither is thoroughly developed.

The problem then is reduced to the question of which component should be developed first, correct movement or form. The contention in favor of the prior development of the habit of movement is that the foundation of the habit should be laid early. By this means bad habits and the necessity of breaking them up will be avoided. The attention can afterward be given mainly to the perfection of the form of the writing. This argument when carried to the extreme leads to the use of strenuous movement drills from the beginning of the first grade up, and to the use of exactly the same kind of movement and the same writing materials throughout. The assumption underlying this practice is, further, that the acquirement of correct habits of movement is the main condition for the acquirement of legible writing. In other words, it is often assumed that legible writing will result without much attention being paid to the form when proper habits are trained. This assumption may be questioned, but it is not the place here to discuss it in detail.

The opposite procedure of paying chief attention at the beginning to the development of the form of the letters rests upon the facts which are known concerning the development of motor skill in the child. The facts at our command indicate that the child when he first enters school is very deficient in this respect. After two or three years his capacity for the acquirement of activities which involve skill and dexterity develops to a marked degree. If this is true, a given amount of drill undergone at the age of eight or nine will have a very much greater effect than the same

amount given at the age of six or seven. In other words, it would be a waste of time and energy to train the child in an activity for which he has not yet developed sufficient motor control.

Evidence in support of this position is found in an examination of the writing of children in the different grades, all of whom have had the same form of training. This training consists in a strenuous drill in arm movement. Such examination reveals the fact that the children of the first three or four grades have profited little by the drill which they have undergone, but between the fourth and the fifth or sixth grade there is a sudden transition. Movement drill here begins to have marked results in the child's writing. This is not due to the accumulation of the results of the past four or five years, since the children who are the subjects of this investigation had not had the movement drill more than one year.

It might be concluded from these considerations that writing should be deferred entirely until the child had acquired sufficient natural motor skill to make its learning economical, but this would entail too great a sacrifice in view of the importance of writing as a means of expression in connection with reading and the other school subjects. Furthermore, the child may during the early years develop the perception of the form of the letters so that he may later have a standard to which he can bring his writing when movement drill is introduced.

If movement drill is deferred until the child is in the third or fourth grade he will employ during the first years a relatively slow movement in which the finger movement is the chief component This will necessitate a marked readjustment of the co-ordination when arm movement drill is introduced, and the form of the writing will temporarily suffer. The child's nervous system is still sufficiently plastic, however, to permit of readjustment of his motor habit, and the sacrifice of form is only temporary. The contrary procedure, in which movement drill is introduced in the first grade, involves a sacrifice of form for a much longer period. From the point of view of its effect upon form, therefore, as well as from the point of view of the development of the co-ordination, strenuous movement drill may well be deferred until the third or fourth grade.

[*To be concluded*]

PESTALOZZIAN INDUSTRIAL EDUCATION FOR JUVENILE REFORM[1]

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Recent agitation and experiments in connection with industrial education in public schools have developed a general interest in all aspects of industrial training. The present tendency to reject formal manual training as inadequate, and to substitute direct training in industrial processes, involves a reversion to the type of industrial education which Pestalozzi advocated. This Pestalozzian scheme finds its best embodiment in some of our juvenile reform schools, and in this form can be traced directly to Pestalozzi in its origin. It is the purpose of this paper to describe its development.

General appreciation of necessity of industrial training for juvenile delinquents.—The necessity and the value of providing industrial occupation and training for orphans and for neglected and delinquent children have been generally recognized. The provisions made for such training have assumed different forms corresponding to variations in fundamental principles at different times. The Pestalozzian basis was prominent during the nineteenth century. To indicate the general character of the social problem, however, earlier provisions in England and the American Colonies will be cited before discussing the Pestalozzian development.

American colonial laws required training in industry.—The early American colonists appreciated the importance of industrial training for children and in some cases provided for it by law. The necessity for this requirement and its nature was expressed in the Massachusetts law of 1642 as follows:

[1] In the last two volumes of the *Elementary School Teacher*, a number of articles appeared which were intended to illustrate a method of teaching the history of education by emphasizing school practice in its relation to social condition. This is the sixth article in this series. A textbook entitled *A History of Modern Elementary Education*, constructed on these principles, by the same author will appear in the near future.

[The General Court of Massachusetts] taking into consideration the great neglect in many parents and masters in training up their children in learning and labor and other employments which may be profitable to the Commonwealth, do hereupon order and decree that in every town the chosen men appointed for managing the prudential affairs of the same . . . . shall have power . . . . to put forth [as] apprentices the children of such as shall not be able and fit to employ and bring them up . . . . and they are to take care that such as are set to keep cattle be set to some other employment withal, as spinning up on the rock, knitting, weaving tape, etc. . . . . They are also to provide that a sufficient quantity of materials, as hemp, flax, etc., may be raised in their several towns, and tools and implements provided for working out the same.

In Virginia colony: "in 1646 an elaborate plan for industrial education was advanced by the Assembly . . . . [which] marks out the settled policy of the State in the matter of industrial training."[1] This law refers back to English precedents in these words:

WHEREAS sundry laws and statutes by Act of Parliament established, have with great wisdom ordained, for the better education of youth in honest and profitable trades and manufactures . . . . that the justices of peace should, at their discretion, bind out children to tradesmen or husbandmen to be brought up in some good and lawful calling . . . . be it therefore enacted by the authority of this Grand Assembly, according to the aforesaid laudable custom in the Kingdom of England. . . . .

The act provided that the commissioners of the several counties were to send two poor children from each county to James City to be "employed in the public flax houses under such master and mistresses as shall there be appointed in carding, knitting and spinning." Special dormitories were to be built and each county was to send food and other provisions for the children. In 1668 and other years, acts were passed empowering county courts to make similar provisions for educating and employing poor children.

Antecedent provisions in English laws.—That the colonial laws requiring industrial training were reproductions of antecedent English laws of the same nature was definitely stated in the preamble of the Virginia law of 1646 which we quoted. It is maintained by some authorities that such legislation as this constituted the fundamental basis of all English legislation for elementary education down to the nineteenth century; in other words, that

[1] Clewes, *Educational Legislation of Colonial Governments*, p. 355.

there is a very definite connection between legislation for poor relief and apprenticeship and legislation relative to elementary education.

The English social situation of the sixteenth and seventeenth centuries which necessitated such legislation was similar in character to the Swiss situation which confronted Pestalozzi later; namely, a very large number of unemployed, vagrant, shiftless, untrained children and adults. Many factors combined to cause the English situation, among them being the suppression of the monasteries by Henry VIII which abolished some of the dominant institutions for poor relief; and second, the abolishing of guilds by the Chantry acts which destroyed another of the important forms of poor relief. Other economic factors were causes also, notably the consolidation of small farms for grazing purposes, and the consequent eviction of hundreds of small farmers who were thus deprived of their means of livelihood. As a consequence we find important legislation in the reign of Queen Elizabeth, which included the same elements to which we have called attention in the colonial laws.

Domestic industries the basis of Pestalozzian industrial education.—The Pestalozzian industrial education was originally planned to meet industrial conditions which existed in places where factory systems had not developed; in other words it was based on the conditions of domestic industries and handicrafts which prevailed generally down to the beginning of the nineteenth century. The factory system with the attendant industrial and social revolution, necessitated a change in the type of industrial work but not in the general scheme which Pestalozzi advocated.

Factories did not destroy possibilities of Pestalozzi's scheme.—Factories were early introduced into Switzerland in certain select districts, and Pestalozzi himself commented on the new and peculiar social problems which they created. But many parts of Switzerland continued in the stage of home or domestic industries and handicrafts, even as they do to the present day. The same was true of the United States during the early nineteenth century. The more primitive forms of industry continued to be practiced in some places at the same time that the factory development was dominant in others.

Included in the domestic industries and the handicrafts were farming, work with textiles, namely, spinning, weaving, and dyeing of cotton and wool, and work with wood, metal, and leather. Examples of leather work were the shoe-making and nail- and tack-making which many New England farmers engaged in at home during the winter months. The early Pestalozzian industrial education emphasized especially farming and work with textiles. In the later development, under Fellenberg, other trades were taught. The enormous development of textile factories soon eliminated this form of labor from such schemes of education, but there remain, even at the present day, many forms of manual labor which are suited to the general purposes of the Pestalozzian industrial education.

Moreover, many intellectual and social leaders who have been impressed with the social evils that have attended factory development have idealized the former conditions of industry and have endeavored to reproduce them on a limited scale. This endeavor is represented in the arts-and-crafts movement of the present day. Many who consider this reaction against the factory system to be utopian believe, however, in the educative value of industrial training along the lines of domestic activities, agriculture, and handicrafts.

Pestalozzi's writings described the degraded condition of Swiss peasantry.—Two phases of Pestalozzi's own work directly related to industrial education were the publication of *Leonard and Gertrude* (1781) and his experiments at Neuhof and Stanz. Every student should spend a few hours reading *Leonard and Gertrude* to get an appreciation of the low moral standards which prevailed in the Swiss villages.

The typical village which Pestalozzi described was governed by semi-feudal customs, being under the control of a nobleman who lived in a castle outside of the town. Owing to the dishonest administration and oppression by his subordinates, the most degraded conditions had developed. The elements of viciousness in this life, as described by Pestalozzi, included all forms of public and private dishonesty, graft and oppression, intrigue and perjury, cheating and lying, gambling, drunkenness, hypocrisy in religious

matters, superstition—including belief in witchcraft and ghosts—domestic disorder, idleness, laziness, general shiftlessness, and filthiness.

In contrast with all these, Pestalozzi presented examples of possible social reforms which would result in a fair, honest, and efficient management of the public affairs, in real piety and charity, domestic peace, cleanliness and order, appreciation of responsibility, industry, economy and general thrift, and more intelligent methods of labor.

Condition of neglected and vagrant children.—Other striking examples of the prevailing social conditions are contained in Pestalozzi's descriptions of the individual children in this establishment at Neuhof and Stanz. These examples and others show that many of the children had not even profited by the meager instruction offered in the village schools. When we recall that this instruction consisted in a bare memorizing of the catechism, and the acquirement of a stumbling facility in reading, we see how hopelessly inadequate it was to cope with the social conditions that Pestalozzi described.

School to reproduce conditions of ideal home.—Pestalozzi's plan for social reform through training in domestic industries was described in *Leonard and Gertrude.* The central idea was that the school should reproduce the typical conditions of a well-ordered peasant's or artisan's home. This idea is expressed in the following quotations:

> The school ought really to stand in the closest connection with the life of the home, instead of, as now, in strong contradiction to it. . . . . The school ought to be brought into harmony with the developing influence of domestic life. . . . . All verbal instruction, in so far as it aims at true human wisdom and at the highest goal of this wisdom, true religion, ought to be subordinated to a constant training in practical domestic labor.

Domestic labor in Gertrude's home.—The home of Gertrude, which Pestalozzi described, was his ideal. In addition to receiving careful religious and moral training, the children spent a large part of the time spinning under the direction of their mother. The following quotation presents the picture seen when Gertrude, the mason's wife, brings home some children of an unfortunate neighbor, Rudy.

The mason's children were all at their spinning wheels and although they greeted their guests joyfully, they did not stop working for a moment. "Hurry and get through and then you can play with your little friends till six o'clock," said Gertrude. Rudy's children stood in open-mouthed wonder at the beautiful work and the cheerful aspect of the room. "Can you spin?" she asked. "No," they answered. "Then you must learn, my dears. My children wouldn't sell their knowledge of it at any price, and are happy enough on Saturday, when they get their few kreutzers. The year is long, my dears, and if we earn something every week, at the end of the year there is a lot of money, without our knowing how we came by it."

Supplemented by intellectual and religious instruction.—This domestic labor constituted the central activity of the home, but it was supplemented by intellectual training much of which was carried on while the children were doing the manual work. The following quotation describes how this was done:

The children all helped wash the dishes, and then seated themselves at their customary places before their work. . . . . First the children sang their morning hymns, and then Gertrude read a chapter of the Bible aloud, which they repeated after her, while they were spinning, rehearsing the most instructive passages until they knew them by heart.

The instruction she [Gertrude] gave them in the rudiments of arithmetic was intimately connected with the realities of life. . . . . She made them count their threads while spinning, and the number of turns on the reel when they wound the yarn into skeins.

Instruction in spinning in the ideal village school.—Pestalozzi believed it possible to organize the village school in imitation of Gertrude's home as indicated in the following quotation:

The lieutenant began his school, and Gertrude helped him in the arrangement of it. They examined the children with regard to their previous studies. . . . . Besides reading, all were to learn writing and arithmetic, which previously had only been taught to the more wealthy in private lessons. . . . . A good, capable woman who came to take charge of the sewing, spinning, etc., proved a most valuable and conscientious helper in the work. Whenever a child's hand or wheel stopped she would step up and restore things to their former condition. If the children's hair was in disorder she would braid it while they studied and worked . . . . and she showed them how to fasten their shoes and stockings properly, besides many other things they did not understand.

Educative labor to be taught in reformatories.—Finally, Pestalozzi indicated his belief that such training should be provided, not only

in the ordinary schools, but also in orphan asylums and houses of correction where the inmates should be given definite education in manual trades.

Pestalozzi taught farming and textile work at Neuhof.—The plan which Pestalozzi described in *Leonard and Gertrude* (1781) he had tried to put into practice on his farm at Neuhof from 1774 to 1780. When he proposed this experiment, although he had just failed as a farmer, several philanthropists provided the necessary funds.

Most of the children that Pestalozzi took in were vagrants and beggars. Many of them were vicious and improved little in the short time spent under his care. Others, however, were honest and capable and needed only the opportunity which he offered to develop into efficient persons. At one time he had thirty-seven children, at another fifty, and later eighty. Describing the management of the institution he said:

> I get very valuable help from Miss M. of Strassberg, who is both highly gifted and of untiring activity. I have, besides, a master to teach weaving, and two skilled weavers; a mistress to teach spinning, and two good spinners; a man who winds for the weavers and teaches reading at the same time; and two men and two women who are almost always employed on the land.

Pestalozzi had no administrative ability and the management of such an enterprise, calling for unusual skill, was beyond his powers. Consequently the experiment was abandoned. In spite of its failure, it had served a valuable purpose in demonstrating the lines along which industrial education might develop. It remained for Emmanuel Fellenberg to organize a successful institution on these same lines.

Emmanuel Fellenberg's Pestalozzian Institutions. Early acquaintance with Pestalozzi.—Pestalozzi carried on an intimate correspondence with Emmanuel Fellenberg in 1792 concerning the French Revolution; and in 1804, for a few months, Pestalozzi tried to conduct his school under the business management of Fellenberg at Münchenbuchsee.

Fellenberg active in Swiss social reform.—Fellenberg's father, a high governmental official in Switzerland, was interested in Pestalozzi's experiments, and thus Emmanuel, while quite young, became acquainted with the latter. His mother early directed his atten-

tion to the care of the poor and unfortunate. He pursued political and social studies in German universities; visited Paris in 1795 to ascertain the French intentions with regard to Switzerland; tried in vain to arouse his country to appreciate its danger; led Swiss troops against the French when they invaded Switzerland in 1798, but was defeated and had to flee the country. Later he was permitted to return. He occupied important administrative offices for a while, but he soon became disgusted with the general dishonesty and lack of interest in public affairs, and turned his attention to education. He became convinced that legislation in favor of improvements in education was too slow a process and decided to use his ample fortune in establishing "a model institution in which it should be proved what education could accomplish for humanity." For this purpose he purchased a large country estate at Hofwyl, near Berne. Here he conducted, from 1806 to 1844, educational experiments along Pestalozzian lines which were as successful from an administrative and economic standpoint as Pestalozzi's were unsuccessful.[1]

Included industrial training of rich as well as poor.—Fellenberg's aim was to establish an institution in which the poor would be trained to work, and the rich trained to appreciate the work of the poor and to be efficient in directing it for the public good. He believed that agriculture, as the principal occupation of the people, was best adapted to produce the harmonious physical and intellectual development at which he aimed. His aim was broader than Pestalozzi's had been at Neuhof, inasmuch as it included not only the industrial education of the poor, but also the training of teachers for rural schools and the training of the rich.

Many successful phases of the Hofwyl institution.—The Hofwyl institution was organized gradually, each element in the organization being well established before another was added. By 1829, according to William Woodbridge's contemporary description, the institution included the following elements: (1) a farm of about 600 acres; (2) workshops for manufacturing agricultural implements and clothing for the inhabitants; (3) a lithographing

[1] *Am. Annals of Education*, Vol. I (1830), based on a letter from Fellenberg to Woodbridge, August 24, 1829.

establishment where music and other things were printed; (4) a literary institution for the education of the wealthy and higher classes; (5) an intermediate or practical institution training for handicrafts and middle-class occupations; (6) an agricultural institution for the education of the poor to be farm laborers and for the training of rural school teachers.

The agricultural institution most significant for elementary education.—It was this sixth phase of the work that was generally copied in Switzerland and other European countries. Just as Pestalozzi had intended, agriculture was to be used as a means of moral and practical education for the poor. It also made their labors defray the expense of their education. In addition to training in agriculture, the institution provided training for cart-makers, carpenters, joiners, blacksmiths, locksmiths, shoemakers, tailors, etc. Fellenberg's practice of giving intending rural school teachers a thorough training in scientific agriculture was copied in many of the normal schools of Switzerland. The practice of training poor children in agriculture and other occupations under the conditions of family life was soon copied in most countries except the United States.

General adoption of Fellenberg's plan. Farm schools established in all cantons of Switzerland.—Henry Barnard wrote in his *National Education in Europe* (1854, p. 488):

> In each of the cantons of Switzerland, in 1852, there was at least one rural or farm school conducted on the basis of a well regulated family. The school is open both to girls and boys. . . . . The number of inmates averages from twenty to forty, and when the entire family exceed twenty, it is subdivided into lesser ones of twelve or more, who are placed under an assistant "father." The school instruction occupies three hours in summer and four in winter; the remainder of the day being devoted to work in the field or garden, or at certain seasons of the year and for a class of pupils, in some indoor trade or craft.

Redemption industrial plan imitated in other European countries.—The above-described scheme was imitated in many parts of Europe. In Germany, one of the most interesting examples was Redemption Institute or "Rauhe Haus," established in 1833, near Hamburg. This was a private charity admitting boys and girls of the worst type. Ordinarily such children would have been

identified with the criminal class and would have developed as criminals.

> At the beginning of 1844, of 81 children who had left the establishment, 33 were apprenticed to artisans or mechanics, 7 entered at service as farm-laborers or domestics, 7 had become day laborers, 11 (girls) had become servants, 9 had become sailors, 3 entered the army, 1 prepared himself for the university, 5 continued at school; the occupation of 3 is unknown, and 2 children belonging to a family of vagrants could not be kept at any regular occupation.

Only 6 or 7 of these had misbehaved after leaving the school.

In England the famous Battersea Training Establishment for teachers was founded in 1839 in definite imitation of the Swiss normal schools. A noted reform school and farm for juvenile criminals was established at Red Hill in 1849 by the Philanthropic Society. On a farm of 140 acres, without bars or walls or gates, criminal children, including some of the most vicious, were trained and reformed according to the Pestalozzian-Fellenberg plan.

Fellenberg manual-labor scheme popularized in the United States by Woodbridge (1830).—One of the chief factors in popularizing the Fellenberg idea in the United States were the letters of William C. Woodbridge describing the Hofwyl institution, which started in the *American Journal of Education*, and ran for almost two years (1831–32) in the early volumes of its successor, the *American Annals of Education*. Henry Barnard said that of more than one hundred reports concerning Fellenberg's establishment "the most particular account and that in which the spirit of the institutions was considered by their founder to be best exhibited" was the one by Mr. Woodbridge.

American manual-labor schools mostly for higher education.—In the United States, the original Pestalozzian element (moral redemption through manual labor) in the Fellenberg scheme was not copied until much later than in most European countries. On the other hand, Fellenberg's idea was carried out in manual-labor institutions, organized to provide secondary or higher education along literary lines. These were very common during the second quarter of the nineteenth century. The two ideas most prominent in this development were: (1) the necessity of physical exercise;

and (2) the possibility of self-support for poor students. Theological seminaries, colleges, and many less important schools were established upon these principles from Maine to Tennessee. The movement began actively about 1825 and continued for about a quarter of a century. In general, it did not realize the hopes of its advocates, although some phases of it persist today in the farm work for self-support that students carry on in some of the agricultural colleges. Another phase of the development in the United States which is more directly related to elementary education remains to be discussed.

Industrial work in American reformatories. Early reformatories organized on prison principles.—We noted in an earlier paragraph that industrial training in reform schools on the family plan was copied from Switzerland in several European countries but was adopted very tardily in the United States.

In 1824 the House of Refuge for delinquent boys was established in New York City and similar institutions were organized in Philadelphia in 1826 and in Boston in 1827. Only a few others were established before 1850, but between 1850 and 1860 over a dozen were established. These institutions were the results of the movement which had started in England in the latter part of the eighteenth century, to provide separate institutions for juvenile delinquents instead of confining them with adult criminals, as was the general practice. These new institutions differed from those established on the Pestalozzian plan in two fundamental respects: (1) they were not homes, but were simply separate prisons for children; (2) although they provided industrial work it was not "educative labor," but prison-contract labor. The principal factor in this labor was the amount of money that the institution could make from it.

American reformatories little affected by Pestalozzian principles before 1873.—In 1873, Miss Mary Carpenter, one of the leaders in juvenile reform work in England, visited America and criticized the prison-like character of the reform schools. This criticism was one of the influences which was operative in stimulating the movement to reorganize these institutions on the Pestalozzian basis. I have found no general account of this development but

the following items are fair examples of it. They are taken from the report of the United States Commissioner of Education for 1882–83:

Pestalozzian basis of organization common in the eighties. Cottage plan.

The reform school of the present is a decided improvement on those which were first established sixty years ago. The changes effected have been stated as follows in a pamphlet issued by the Colorado State Industrial School:

"In the earlier history of these schools, all inmates were classed together. For their safe-keeping it was thought necessary to fasten them in cells at night; strong iron bars guarded the windows, etc. . . . . In the modern reformatory neither high walls, cells, bolts or bars are found. Nothing in the surroundings distinguishes them from first-class public schools."

The Ohio Industrial School for Boys, opened at Lancaster, Ohio, in 1856, was the pioneer American institution on the cottage plan. These cottages were described in 1882 as follows:

The family buildings are arranged in a segment of a circle around the main building with the exception of a double building, called the Ohio, for the use of the very youngest boys, which is separated from the main and other buildings nearly half a mile, but is connected with the rest of the institution by a good board walk. These family buildings are named after the rivers in the state.

The building for the youngest children accommodated 100 boys, those for the older children accommodated 50. The large building for younger children contained schoolrooms for the "elder brother and his family," sitting-rooms for boys in the evening, sleeping-rooms for teachers and pupils, a playroom, workshop, etc. Here "home life more attractive than they had ever known awaited most of the inmates."

Pestalozzian educative labor replaces prison contract labor.— These quotations indicate the change from the spirit of prison life to the Pestalozzian spirit of home life. A similar change has taken place in the industrial work. On the old plan, this consisted of contract sewing and tailoring, cigar-making, brush-making, glove-making, knitting, shirt-making, the cane-seating of chairs, etc. These were factory industries of little educative or economic value for the individual child. For these have been substituted the domestic industries of the institutions, and other activities con-

nected with the maintenance of the plant, such as farming, gardening, care of stock, carpentering, blacksmithing, plumbing, painting, brickmaking, furniture making, etc. In addition to these, other special trades, such as printing and telegraphy, have been added.

General educational significance of Pestalozzian industrial education.—The special significance of this movement has been sufficiently indicated in the previous discussion. Its general significance appears when it is compared with the "manual training" movement, and with the recent tendencies to introduce direct industrial training into the public schools. The Pestalozzian movement, as successfully organized in practice, antedated the manual training movement by over half a century. It differed from the latter in aiming, to a considerable degree, directly at special efficiency in some trade or occupation. The manual training movement emphasized, on the other hand, general or formal values as opposed to specialized efficiency, "making the hand the obedient servant of the brain, training the eye for good form and shape, and teaching neatness and correctness in the execution of their work." The Pestalozzian system has proven effective in special institutions, but has not had a chance in the American public schools. Manual training has had some opportunity to be tested out in the public schools, and many educators affirm that the results have not been satisfactory from the standpoint of industrial education. The recent movement for industrial education in the United States has tended to emphasize the necessity of training in specific industrial processes, which was the prominent element in the Pestalozzian system. The present tendency seems to be to experiment in the public schools with the modified Pestalozzian system as it is found in some juvenile reform schools.

LEARNING TO READ[1]

JOSEPHINE HORTON BOWDEN

The adult gives no more thought to his reading than he gives to his walking. The process has become automatic; when he sees the printed symbols he reads in spite of himself. He can no more tell how he reads than he can tell how he walks; he simply reads. He has so far forgotten the time and energy he spent mastering the process that he is not even aware of its complexity. Reading sometimes tires his brain and sometimes tires his eyes; further in the analysis he does not go. He may think that his eyes do not move across the page with each line but that he takes in two or more lines at once; he may believe that the movement is a continuous one and that he experiences no difficulty in gauging the length of the line or in fixating any given point in the line. When the psychologist tells him that he reads but a line at a time, that the movement across the page is a succession of short movements and brief pauses, and that even after the movements have become automatic, the eyes sometimes fail to fixate the correct point, he realizes that learning to read is a difficult task for the eyes, and he understands why the beginner's finger follows the line word by word as he reads. Tachistoscopic readings and photographic records of the movements of the eyes tell him that instead of reading whole sentences or even whole phrases at a glance, in those brief reading pauses he takes in, on the average, but a word or two regardless of sentence structure. He is not so much at a loss to understand why the child reads haltingly, a word at a time. He knows that there is a relation between reading and speech, though he may not realize how close it is. He may have observed lip-movement in others and have been unconscious of the inner speech that accompanies his own silent reading. He may even have believed himself to be a pure visual reader, though there is no proof that that type exists. When he has become conscious

[1] From the Laboratory of Experimental Education, The University of Chicago.

of that form of inner speech which is present in all his reading, he ceases to marvel that the beginner should, when he reads to himself, whisper the words or at least go through the motions of pronouncing them. Add to these processes that still more difficult one by which the printed words arouse thought in the mind of the reader and one realizes in a way the problem that confronts the child when he begins to read.

We have been learning to read for so many centuries that one might think that the technique had long since been perfected but primary reading still presents its problems and there are almost as many methods as there are teachers and almost as many theories as there are psychologists and educators interested in the matter.

There is still opportunity and need for careful observation and analysis of the way in which children learn to read under the various methods employed. We know surprisingly little about the methods that *children* use in contrast to the abundance of teacher's methods. Observant teachers of reading have doubtless accumulated in their own experience many pertinent facts, but they have not written them down or attempted to relate their observations, so that there are no accounts of the ways, to be specific, in which beginners learn to recognize words as wholes. When the children were taught their letters first, they supposedly learned words by recognizing some of the letters and letter combinations, building up the word concepts on the basis of their previous analysis. What happens now that they are supposed to recognize the words as wholes from the start, or with only such analysis as, for example, the drill in phonics necessarily supplies? It was with the hope of making some contribution to the study of such a question that these experiments were undertaken.

A number of experimental studies in recognition of words by adults has been made. The purpose of the following experiments is to determine how children recognize words. There are two experiments: first, an individual study; and second, a class study.

The child in the first study was a girl six years old, a normal child, who was interested in learning to read, but who had had almost no instruction in reading. She was not attending school

and had never attended school; she was receiving no instruction during the period of the experiment save the instruction in reading. The problem was to determine how a child learns to read with only printed words in context and out of context, with no assistance save the direction of the work. There was no analysis, either letter or phonic, and no use of script. The time of the experiment was eight weeks, from February 7 to April 13, with a week's vacation; the study period was from 10:30 to 11, five days in the week. The material, which was home-made, i.e., made primarily by the child, had as its subject-matter incidents of home-life—dolls, etc. The story, made one day, was typewritten for the next day's lesson with each new word on a separate card. The story was first read by the child; the words she did not know were given her, then the words were read from the cards. This was repeated until the lesson was mastered or until the child asked for new material. A record of each day's work was kept in which were recorded the rate of learning, any interesting comments of the child, and the tests that were given. At the end of each week the child read the material of the week and a record of the words known and not known was kept. Then all of the words of the week on the separate cards were gone through and the words known and not known recorded. At the end of each month a similar test was given of the work of the month.

The rate of learning in words for each week was as follows: 11, 6, 12, 10, 17, 14, 12, 18. The first week's record was rather high because it included the words the child had already learned. During the first month 53 words were presented, of which the child knew in context 45, or 83 per cent, and out of context 28, or 52.8 per cent. The second month 96 words were presented, of which she knew in context 85, or 88.5 per cent, and out of context 60, or 62.5 per cent. These figures show the significance of context as a cue in the recognition of words. Even from the first, when she did not know the word on the card, she asked for the story, that she might find it in context. If this was not allowed, she sometimes said the sentence to herself until she came to the word.

As evidence of the methods employed by the child the following may be cited. First, incidents; for example, one day when the

child was given the cards to read from, it was observed that she read with equal ease whether the card was right side up or upside down. This incident suggested a test which was later given. Second, comments of the child; for example, when she was asked to find in the context the word "shoes," she said that "dress" looked so much like "shoes" that she was afraid she would make a mistake. Third, questioning; for example, she had trouble to distinguish between "sing" and "song." When she had mastered the words she was asked how she knew which was which. Her reply was, "by the looks." When questioned further she put her finger on the "i" and the "o." These three types of evidence correspond to introspection with the adult. The fourth type of evidence is a comparison of the words learned with the words not learned as to the parts of speech, geometric form, internal form, and length. Fifth, misreadings; for example, "dogs" was read "twigs," and "feathers," "fur." Sixth, mutilations; for example, "dogs" was printed "digs," "lilac" was written "lalci."

The class consisted of five children, six years old, just from the kindergarten, who had had no experience in reading. The problem was the same as in the former study though the conditions were different. The words were presented in both script and print; there was no phonics, but the names of the letters were freely used, though without an effort to teach them. The time of the experiment was the same; but there were two study periods, one from 8:45 to 9:15, when the material was presented by the teacher in charge, and the other from 10:20 to 10:40, when the writing exercise took place and when word drill and testing were given by the experimenter. The method of teaching reading in this school is the imitation method, the basis of which is that reading should be learned as talking is learned. There is no reading period but words are presented in connection with all the work given, though particularly with nature-study and history. The teacher presented the material for the day, writing the words on the board as she used them. When the presentation was finished, the matter was put into sentences which were written on the board and then read by the children. Sometimes these groups of sentences were printed on charts and read a second or third time. The teacher

also had the important words printed on cards which she showed the children as she presented the material. The testing and recording were similar in method to those in the former experiment except that not all the words presented in context were used as drill words.

This experiment gave opportunity for the study of the influence of writing upon the learning of words, however, since the writing lesson was not under the control of the experimenter and since oftentimes words that were already known were written, the results are not so reliable as they might be. It was the impression of the experimenter that the writing did not assist in the learning, probably because the child was concerned with the operation of writing so far that he did not think about what he was writing. The number of words written by the class during the period was 25. Of this number "C" learned 17, or 68 per cent; "S" learned 15, or 60 per cent; "D" learned 12, or 48 per cent, "P" learned 14, or 56 per cent; and "Sp" learned 15, or 60 per cent—an average of 58.4 per cent, a figure which does not tell anything in particular about the influence of writing. With the idea in mind that possibly a comparison of the whole number of words learned with those learned and written might show more definite results, the following percentages were worked out. "C" learned 41 words of which 17, or 41.4 per cent were written; "S" learned 30 words of which 15, or 50 per cent were written; "D" learned 21 words of which 12, or 57.1 per cent were written; "P" learned 25 words of which 14, or 52 per cent were written; and "Sp" learned 27 words of which 15, or 55.5 per cent were written. The average is 51.2 per cent, which gives even less influence to writing than the preceding percentages.

The results of the experiments are discussed in the following order: parts of speech; word form, significance of misreadings, significance of mutilations, and methods of learning.

Table I gives results with regard to parts of speech and word form. Since the drill words of the class were selected, there is not enough variety in parts of speech to give definite results. In the case of "E," the child of the individual study, there is variety enough to show that nouns and adjectives are more easily

learned than other parts of speech. This would seem to indicate that the content of the word and its use in the sentence are factors which influence the ease with which it is learned.

TABLE IA

COMPARISON OF WORDS LEARNED WITH WORDS NOT LEARNED

	E			C			S		
	Cases	Learned	Per-centage	Cases	Learned	Per-centage	Cases	Learned	Per-centage
Parts of Speech—									
Nouns	64	51	76.9	44	29	65.8	44	20	45.4
Verbs	33	11	33.3	10	6	66.6	10	4	40.
Adjectives	21	17	80.9	6	3	50.	6	3	50.
Pronouns	9	8	88.9	3	2	....	3	2	....
Adverbs	8	1	12.5	1	..	....	1	..	....
Prepositions	4	1	....	2	1	....	2	1	....
Conjunctions	2	1	....	..	..	....	..	..	....
Geometric Form—									
Linear	20	9	45	11	7	63.6	11	6	54.5
Superlinear	76	48	63.1	37	22	56.7	36	16	43.2
Sublinear	19	14	73.6	2	1	....	2	1	....
Super- and sub-linear	26	19	73.	16	11	62.5	16	71	45.
Internal Form—									
Straight	43	32	74.4	20	16	80.	20	13	65.
Curved	36	21	58.3	19	9	47.3	19	7	36.7
Neither	62	37	59.6	27	16	59.2	27	10	37.
Length—									
One	2	2	....	1	1	....	1	1	....
Two	7	6	85.7	4	2	....	4	2	....
Three	23	16	69.5	11	8	72.7	11	7	63.6
Four	39	22	56.4	20	10	50.	20	8	40.
Five	26	14	53.8	12	7	58.3	12	5	41.6
Six	17	10	58.8	7	4	57.1	7	2	25.9
Seven	13	9	62.2	3	3	....	3	2	....
Eight	1	1	....	4	3	....	4	..	....
Nine	8	5	62.5	4	3	....	4	3	....
Ten	3	3	....	..	..	....	..	..	....
Eleven	1	1	....	..	..	....	..	..	....
Twelve	1	1	....	..	..	....	..	..	....

Messmer[1] makes two classes of words, according to geometric form. The first class is linear words, like "acorns," "saw," and "were," words with no high letters. Into this group he also puts

[1] Oskar Messmer, "Zur Psychologie des Lesens bei Kindern und Erwachsenen," *Archiv für die gesamte Psychologie*, Bd. II, Hefte 2 u. 3; cf. Huey, *Psychology of Reading*, pp. 93 ff.

words with letters that extend below the line because, he says, the eye does not notice the projection and the effect is as though the letters were all letters of the line. The second class is superlinear,

TABLE I*B*

COMPARISON OF WORDS LEARNED WITH WORDS NOT LEARNED

	D			P			Sp			
	Cases	Learned	Per-centage	Cases	Learned	Per-centage	Cases	Learned	Per-centage	Average
Parts of Speech—										
Nouns	41	15	36.5	44	21	47.7	41	20	48.7	53.5
Verbs	5	1	....	8	..	....	3	1	....	34.9
Adjectives	6	3	....	6	1	16.6	6	4	66.6	52.8
Pronouns	2	2	....	3	2	....	2	1	....	....
Adverbs	..	..	....	1	..	....	..	..	....	....
Prepositions	1	..	....	2	1	....	1	1	....	....
Conjunctions										
Geometric Form—										
Linear	8	3	37.5	9	5	55.5	6	5	83.3	56.5
Superlinear	34	15	44.1	36	15	41.6	33	16	48.4	50.
Sublinear	..	..	....	2	..	....	1	1	....	....
Super- and sub-linear	13	3	23.	16	5	31.2	13	5	38.4	45.8
Internal Form—										
Straight	16	7	43.7	19	10	52.6	15	10	66.6	65.3
Curved	17	6	35.2	18	5	27.7	16	7	43.7	41.4
Neither	22	8	36.3	26	10	38.4	21	10	47.6	45.4
Length—										
One	1	1	....	1	1	....	1	..	....	....
Two	3	1	....	1	1	....	3	2	....	....
Three	9	4	44.4	9	3	33.3	9	5	55.5	56.5
Four	15	8	53.3	20	8	40.	15	8	53.3	48.8
Five	11	1	9.9	12	3	25.	11	3	27.2	35.9
Six	6	3	50.	7	3	42.8	6	3	50.	48.1
Seven	3	1	....	3	2	....	3	2	....	....
Eight	4	..	....	4	..	....	4	1	....	....
Nine	4	2	4	4	3	....	4	3	....	....
Ten	..	..	....	..	..	....	..	..	....	....
Eleven	..	..	....	..	..	....	..	..	....	....
Twelve	..	..	....	..	..	....	..	..	....	....

like "Eskimo" and "coat," words with high letters. Since the child's eye has not been trained to follow the line, two other classes not proposed by Messmer have been added: sublinear—like "primrose," "my," and "going," words containing letters that extend below the line; and super- and sublinear—like "dogs," "polar-

bear," and "yesterday," words with letters that extend both above and below the line. Messmer says that the linear words are less easily recognized because the contour is unbroken. However, four of the six children learned more of the linear words than of the other groups. Except in the case of "E," the child of the individual study, there were not sublinear words enough to show any results; but in her case, these words were read somewhat more readily than those of any other group. In only one case were the superlinear words, which Messmer holds to be more easily recognized, learned more readily than those of any other group.

Messmer makes a second classification of words according to internal form based on the type of line of which the letters of the word are made. He speaks of letters of straight lines like "n" and "f," letters of curved lines like "o" and "s," letters of curved and straight lines, like "d" and "p," and letters of oblique lines, like "w" and "y." He holds that words in which straight lines predominate are least easily recognized because most of the letters belong to this class and the word has no distinctive character. He holds that words containing both letters of straight lines and letters of curved lines are most easily recognized. In the table given, by preponderance of straight lines is meant that more than one-half of the letters of the word are straight-line letters, like "ferns" which contains three straight-line letters and two curved-line letters. By preponderance of curved lines is meant that more than one-half of the letters of the word are curved-line letters, like "dogs" which contains no straight-line letters, three curved-line letters, and one straight- and curved-line letter. By preponderance of neither is meant that the letters of the word are distributed among the classes, no one of which contains more than one-half, like "worm," which has two straight-line letters, one curved-line letter, and one oblique letter. Without exception words of straight lines were most easily learned; words of curved lines less easily learned; and words of neither just a little more readily than those of curved lines.

The significance of the length of the word does not come out very plainly in this comparison, except in the case of the child in the individual study, probably because there was not variety enough

in the length of the drill words. In the case of "E" the figures show that the short words and the long words were most readily learned and that the words of five letters gave most difficulty.

TABLE II

POINTS OF RESEMBLANCE BETWEEN THE WORD AND ITS MISREADING

PUPIL	MISREADINGS	LENGTH		COMMON LETTER		INITIAL LETTER		FINAL LETTER		CONTOUR		ASSOCIATION		TOTAL POINTS OF RESEMBLANCE
		Cases	Percentage	Cases	Percentage	Cases	Percentage	Cases	Percentage	Cases	Percentage	Cases	Percentage	
C	38	16	23.5	16	23.5	17	25.	9	13.2	5	7.4	5	7.4	68
S	37	26	41.9	17	27.4	2	3.2	7	11.2	6	9.6	4	6.7	62
D	30	17	36.1	13	27.6	13	27.6	1	2.1	3	6.4	..	...	47
P	27	13	35.2	7	19.4	8	22.2	4	11.1	2	5.5	2	5.5	36
Average			34.1	..	24.4	..	19.5	..	12.6	..	7.2	..	4.9	..
E	45	27	27.5	12	12.2	17	17.3	24	24.4	10	10.1	8	8.5	98

The significance of misreadings is brought out in Table II. The misreadings of each child were tabulated and points of resemblance between the word and its misreading were recorded. Of these points of resemblance, length is most common, with an average of 34.1 per cent for the class, and 27.5 per cent for "E." The common letter, for example, the "g" and "o" in "igloo," which was read "dogs," comes second for the class with an average of 24.4 per cent, though not for "E," probably because she knew the names of no letters. The initial letter is third; the final letter is fourth with the class and second with "E." The contour of the word and the association of one word with another, for example, "horse" and "wagon," are of little significance. The table brings out, however, that length, which Messmer says the child does not appreciate, is appreciated more than any other feature of the word.

The most significant table is that of mutilations (No. III). The classes of mutilations are arranged in order of least disturbance to the individual. In the first group, inversion, the words were shown to the children right side up, and after five or ten minutes they were shown again, upside down. This exercise took place in the sixth week. Only two of the five children noticed that the words

were upside down; and the other three when questioned said the words looked just as they had before. This mutilation, though

TABLE III*A*

MUTILATIONS OF THE WORD AS A WHOLE

PUPIL	INVERSION			TRANSPOSITION			SCRIPT			SUBSTITUTION		
	Cases	Read as Word	Percentage	Cases	Read as Word	Percentage	Cases	Read as Word	Percentage	Cases	Read as Word	Percentage
C.	17	12	70.5	16	10	62.5	11	8	72.7	32	12	37.5
S.	16	14	87.5	16	11	68.7	14	10	71.4	29	17	58.6
D.	12	9	75.	6	4	66.6	11	9	81.8	24	7	29.1
P.	13	10	76.9	11	9	81.8	14	9	64.2	17	7	41.1
Sp.	16	16	100.	11	11	100.	13	10	76.9	17	8	47.
Average	14.2	12.5	81.5	12	9	75.9 *62.5	12.6	9.6	73.4	23.8	10.2	42.6
E.				8	3	37.5				21.	8.	38.4

* Average without "D."

TABLE III*B*

MUTILATIONS

PUPIL	OF THE WORD AS A WHOLE						OF A PART OF THE WORD						AVERAGE
	Length and Addition, Omission or Substitution			*Contour* and Substitution or Transposition			*Final Letter* and Substitution or Transposition			*Initial Letter* and Substitution or Transposition			
	Cases	Read as Word	Percentage	Cases	Read as Word	Percentage	Cases	Read as Word	Percentage	Cases	Read as Word	Percentage	
C.	20	4	20.	19	5	26.3	22	11	50.	9	2	22.2	45.2
S.	16	6	37.5	19	9	47.3	22	12	54.5	21	14	66.6	61.5
D.	15	6	40.	16	7	43.7	13	7	53.8	18	6	33.3	53.2
P.	7	5	71.4	9	2	18.1	14	10	71.5	5	1	20.	55.6
Sp.	7	2	28.5	9	2	18.1	14	8	57.1	5	1	20.	57.7
Average	11.4	4.8	37.4 32.5*	14.4	5	30.7	16.8	9.4	57.1	11.6	4.8	32.2 40.6*	
E.	14	3	21.5	9.	..	..	13	2	15.3	21.	4.	19.	20.2

* Without P and Sp.

it gave the least difficulty to the children, would probably be most difficult for the adult. It would seem that the child sees the word as a whole and recognizes it upside down, just as he would recognize

a toy upside down. In the second group of mutilations, transposition, the letters of the word were shifted about, but the contour of the word was preserved; i.e., a letter of the line was put in place of a letter of the line and a high letter in place of a high letter, e.g., "nettims" for "mittens." This mutilation disturbed the children but little more than inversion. The reason may be that, up to this time at any rate, these children had made no connection between the letter and its sound and did not realize that by shifting the position of the letter a new word was made; they merely noticed that the whole word was there. From the first, script and print were used and no comment was made about the difference between the two. Almost from the first the pupils could match the word in script with the printed word and vice versa. The adult, without thinking about the matter, sees no particular resemblance between the word in script and the word in print but to the child evidently the script is merely another form of print. This may be the reason why children learn to read script and print with less effort when they are taught simultaneously than when one is taught after the other is learned and after children have come to examine word forms with some care. In the group of mutilations in which other letters were substituted for those of the word, the contour was preserved as it was in transposition, e.g., "lihac" for "lilac"; but the percentage of mutilations read as words falls from 75.9 per cent in transposition to 42.6 per cent in substitution. This would seem to show that while these children have some pretty definite conceptions of the appearance of the word as a whole, they are also conscious of the parts of the word and notice their presence or absence. In mutilations affecting the length and contour of the word more than one factor enters in, for one cannot change the length of the word without adding, omitting, or substituting a letter; e.g., "cat," "coast," and "coact" for "coat"; and he cannot change the contour of the word without transposing or substituting letters; e.g., "fed" and "der" for "red." It is to be expected that these mutilations would disturb the child more than the preceding ones and they do so—the percentages falling to 37.4 for length and 30.7 for contour. The last two groups of mutilations affected

the part of the word only, though in each case there was either substitution or transposition. The figures show that for these pupils up to the time of the tests the final letter is a little more significant than the initial letter; the opposite is true with adults, probably because through training they have come to depend on the first part of the word for its recognition. It is unfortunate that no mutilations of the middle of the word were presented to determine its significance. The conclusion drawn from these mutilations is that the children saw the words as wholes and, while not conscious of the position of the parts, were conscious of their presence or absence.

The comments and the questions, as well as the misreadings, seem to show that children learn to read words by the trial and error method. It may be the length of the word, the initial letter, the final letter, a characteristic letter, the position of the word in the sentence, or even the blackness of the type that serves as the cue. There were surprisingly few instances of learning by imitation. The first occurred in the fifth week, when one child pointed out the word "the" and two other children pointed out other "the's," though similar opportunities had been presented before. Suggestion, which is a noticeable element in the reading of young children, also played a minor part. There is no evidence in any of the cases studied that the child works out a system by which he learns to recognize words. That he does not work out phonics for himself comes out quite clearly in the transposition test. Furthermore, only once did a child divide a word even into its syllables. There is some evidence that the child is conscious of the letter, though there is none that he analyzes the word letter by letter, except in the case of "E," who so analyzed the word "six." Sometimes, when the child seemed to have made a letter analysis, he failed to recognize the word a second time, and in some cases did not learn it at all.

The scope of this study does not warrant general conclusions. The purpose has been to present some concrete observations of what children do in learning to read, and to suggest some means by which such observations may be analyzed and interpreted. Some considerations which seem to the writer to be at least suggested by the results of this study may, however, be mentioned.

Under the methods of instruction employed with this class as outlined above, it appears that these beginners in reading have after two months or more of instruction secured a sufficient conception of the general appearance of a very limited number of words to recognize them as wholes, that in doing this they made use of only very general cues or points of differentiation between words and have not noticed the finer points of distinction between words and parts of words. It appeared very doubtful to the experimenter whether, under this method of teaching words as visual wholes, the pupils would, of themselves, have come to make this latter necessary analysis with much success. Without some foregoing analysis and subsequent synthesis, the differences between words are not great enough to be recognized merely from the total visual appearance. The early introduction of phonics may supply, in some measure, this analysis. There is an undoubted advantage in having words presented at the start as units and wholes, as contrasted with the discarded teaching by letters. But that a word method can be used very long without some detailed analysis of the structure and parts of the words is altogether too common a notion in the theory if not in the practice of teaching.

STUDIES OF EDUCATIONAL PRINCIPLES

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I. TYPES OF CORRELATION

When the doctrine of correlation was first stated it carried with it a kind of immediate conviction. Everyone realizes that mental processes get their character from their associations. The same fact falls into two different minds. In one mind it branches out into a score of productive lines of thought; in the other it falls lifeless because there are no suggestive associations. By all means let us group around every item of experience productive associations.

The schools took up the suggestion with avidity. Teachers devoted themselves to the discovery of new and interesting associations. They even went farther. They began to invent associations. The writer has a clipping which sets forth the possibility of a novel nature-study lesson to be given on Lincoln's birthday. Because Lincoln freed the slaves, and because the slaves came from Africa, from whence the elephant also comes, the elephant is to be made a subject of special study on February 12. Of course this is not a typical example of that which the advocates of correlation would have us do in the schools, but it makes clear by its extreme character the necessity of defining what is the limit of productive correlation.

Our problem, accordingly, is not to find possible correlations, but to find productive correlations. To this end let us draw a distinction which will be helpful in marking off productive from unproductive associations.

All human experience has justified the bringing together of certain typical methods of thought without reference to the objects to which these methods of thought are applied. The most obvious case of this development of a method of thought is to be found in the science of geometry. All triangles have certain common

characteristics, whether they are made of wood or stone or paper or air. We come therefore to think of triangles without reference to the material which fills them. We reason about triangles. We relate triangles to quadrilateral figures and to many-sided figures. The reason for thinking about all of these different figures together is that we thus cultivate a type of thought, a method of reasoning. In a very proper sense all triangles are correlated with each other and all triangles are correlated with all lines and all quadrilaterals.

In like manner all number relations are correlated with each other. As soon as one establishes a method of adding three and five, he has established a method of adding three and fifteen, three and twenty-five, and so on. The method of adding three is a uniform intellectual operation whether it occurs today or tomorrow, whether it is applied to apples or houses.

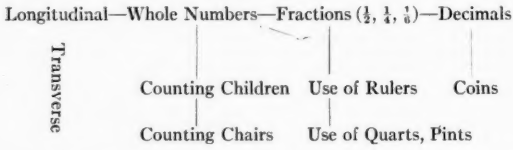
Differences in methods of thought explain many of our distinctions between the sciences. Thus if I think about the formation of land areas and their relations to bodies of water and other land areas I am in a geographical attitude of mind. My method of thinking is the same, whether I deal with Africa or Asia or America. I can lay down certain broad definitions which apply alike to all countries and all times. While I am interested in these geographical matters the correlations which are most obvious are all of the geographical type.

The interesting fact about many discussions of correlation is that the obvious lines of correlation just described are ignored. To many thinkers correlation of number facts means the taking of these facts out of their arithmetical connection and the placing of them in some other connection. Thus the fraction $\frac{1}{2}$ is part of a number scheme. It may be also a part of a cooking lesson, as when one wishes to divide a cupful or a quart into equal parts. Many thinkers would regard it as a true example of correlation to bring the fraction $\frac{1}{2}$ into the cooking lesson, but would fail to recognize that there is just as much correlation in relating $\frac{1}{2}$ to $\frac{1}{4}$ or to $\frac{1}{6}$.

Again the facts of history may be correlated in temporal order or they may be taken out of their temporal order to be coupled with facts of location. Many teachers would be conscious of an

effort to correlate if they coupled a geographical fact with a historical fact, but would never think of using the term correlation if they proceeded from one point in history to the next.

For the purpose of defining the two types of connection which have been under discussion in the foregoing examples, let us speak of longitudinal correlations and transverse correlations. The following diagram will illustrate what is meant by the terms longitudinal and transverse.



With the distinction between longitudinal correlations and transverse correlations clearly in mind, it will readily be seen that the longitudinal connections are much more systematic and orderly while the transverse connections are illustrative and concrete. The longitudinal connections depend, it will be remembered, on certain methods of thought.

Our problem in any particular case is: Which type of connection will contribute most to the training of the pupil? We need not stop to ask whether there is correlation or not, for there will always be some correlation, some connection in the mind between experiences. For no experience can ever stand alone. There will always be either forward movement in some system of well-organized knowledge or transverse movement crossing over from systematic knowledge to concrete application.

If the case is put in terms of our ordinary discussion of school problems we should say, arithmetic is a progressive system of knowledge about number facts. When the pupil learns a little about numbers he can go farther by following the same method of thinking and can thus master more and more fully the system of strictly arithmetical ideas. We stop, however, all along the line and let the child note not merely the arithmetical facts but their application also. Thus we teach the child to add, and then we teach him that adding will help him to count more rapidly all his

possessions. Then we teach him that men add in stores and on the stock exchange. We relate his arithmetic to things which he knows and to many things which he does not know. In these applications we go outside of arithmetic and exemplify transverse correlation.

There are two reasons given for the emphasis of transverse correlations. First, the incidental concrete facts, such as use of rulers and quart measures, are supposed to furnish strong motives which impel the pupil to follow more willingly than he otherwise would the longitudinal series. The longitudinal series is supposed to be difficult and devoid of all natural interest.

Second, the transition from arithmetic to concrete facts is supposed to train in the applications of arithmetic. In later life, we are told, the facts will not present themselves in orderly arithmetical procession. They will come incidentally in the form of things to be measured and weighed. Children should therefore prepare to deal with the facts as they come.

These reasons for emphasizing transverse correlations can and should be met by cogent reasons for the emphasis of longitudinal systems of thought.

First, children have a great aptitude for what we call purely logical relations. Thus the child who was interested in discovering the last number was absorbed in a purely arithmetical problem. Again, the child is filled with interest when he first discovers that the order of the numerals is the same in the fifties and sixties as it is before he reaches ten. The properties of fractions are of absorbing concern to the child who grows up in a social environment which is at all commendatory of his efforts. It is a mistake to assume that children are not capable of longitudinal associations. The race has moved along these longitudinal lines in its intellectual evolution. In the schools of every generation it has been possible to train children in these longitudinal lines, as is evidenced by the criticism of the schools for cultivating exclusively these associations.

These facts may not justify us in repeating the mistake of the earlier school which trained exclusively in longitudinal correlations, but they certainly justify us in emphasizing the fact that longi-

tudinal systems of thought are not wholly foreign to the pupil's nature.

With regard to the plea that children should apply the principles of arithmetic, there can hardly be any disagreement. Do applications interfere with the longitudinal correlation? Not at all. Indeed, it is not until the pupil has some command of the principles of arithmetic that he is in a position to apply these principles. Thus a child who has no real knowledge or appreciation of a fraction will be very much confused by the effort of the teacher to apply the fraction to a problem in cooking. The problem in cooking is so complicated in itself and it has so many natural associations with other problems in cooking that the mind does not travel readily from the kitchen to the abstract methods of reasoning suggested in number. The race to which the advocates of the mixture of cooking and number so often refer, did not mix the two issues. There was a time and place for cooking and a time and place for the cultivation of number. Indeed, in the experience of the race these two interests were usually taken care of by entirely separate people. Only in the latest stages of culture when arithmetic was a mature science and the practice of cooking was well established, did the race apply the methods of exact measurement to the practical problem. In other words, application of arithmetical science is a late stage of development. Put in terms of our earlier diagram, number was matured as a longitudinal system before transverse relations became possible.

This paper is a plea for the recognition of longitudinal systems of training. It should not be regarded as an attack upon all transverse correlations. Transverse correlations are legitimate when the mind is ready to carry over productively its matured systems of thought. The need of emphasis in educational thought of our day does not seem to lie in the direction of these transverse correlations. Our generation needs to consider the importance of certain fundamental longitudinal correlations. These are natural and legitimate. They have grown up as a result of racial experience. They are the traditional lines along which training in the schools has moved. We should not abandon them lightly.

In a subsequent paper the problem of applications will be

treated more fully. It is not assumed that the examples cited above have disposed of the matter. It is contended, however, that the possibility of a productive longitudinal association has been fully established, even when one is looking forward to practical applications. The conclusion to which we have arrived is that longitudinal correlations are at least as legitimate and productive as any other type.

[*To be continued*]

EDITORIAL NOTES

The New Commissioner of Education

When President Taft appointed Professor Claxton to the Commissionership of Education, his act was recognized on all sides not merely as a very fitting compliment to Mr. Claxton's personal qualifications for that important office, but also as a clear and timely recognition of national interest in southern education. The enthusiasm of the South for all that is new and vital in education is personified in the new Commissioner. The national office will profit by his wide acquaintance with schools and school men and women. The South will continue to benefit by his teachings and influence and the other sections of the country will gain in equal degree by his succession to the office which has up to this time been so ably filled.

The Educational System in Baltimore

The City of Baltimore has passed through a series of experiences during the last year which have been observed by educators in all parts of the country with more than ordinary interest. In 1898 a city charter was adopted which aimed to put the control of the schools out of politics. Mr. Van Sickle was appointed in 1900 to the superintendency of the newly organized school system and an era of educational progress opened. Since 1900 the course of study has been enlarged. Baltimore has become widely and favorably known for its special attention to children of unusually good ability. The supervision of schools has been extended. The teaching force has been steadily improved by judicious selection at the time of appointment and by a carefully planned system of promotional tests. All this has been done in the face of conservatism on the part of the community, inadequate financial support, and the opposition of a large number of the teachers. During the last year an acute political situation arose which resulted in the removal of Mr. Van Sickle to Springfield, Mass., where he will be less hampered by unfavorable con-

ditions. Another result of the political crisis was the examination of the city system by a commission which rendered a full report on the educational operations of the system and set an example which is likely to be followed in many other systems. Other consequences will doubtless issue from the political activities of the past few months. It requires no prophet to foretell that Baltimore will suffer just in so far as politics continue to play a part in the school life of the city. It is equally evident that Baltimore may profit greatly by the recommendations of the commission.

Politics Have No Place in School Affairs

It is not the purpose of this editorial comment to deal further with the local issues referred to in the foregoing paragraph. All who are engaged in teaching are vitally concerned that politics shall be kept out of school affairs and are therefore distressed to see that happen which has happened in Baltimore. In the history of American education this controversy will probably come to be known more because it gave rise to a Commission of Examination than because of any of the unfortunate blunders which it made possible. Dr. Brown, commissioner of education of the United States, was invited to organize a group of educators who with himself should examine the situation in Baltimore and render a report on the efficiency of the school system.

Personnel of the Commission

Dr. Brown associated with himself Professor Cubberley of the Department of Education of Stanford University and Superintendent Kendall of Indianapolis. These gentlemen together with their assistants went to Baltimore, held hearings, visited the schools, inspected records, made comparisons of Baltimore with other cities, and rendered through the Bureau of Education a full report.

The Report

The report is evidently drafted with a view to the need of the citizen for broader information regarding school movements in all parts of the country. How money is spent, how supervision is worked out, how the course of study has grown, are all shown in clear form. This Bulletin No. 450 is a model on which Superintendents may very well pattern their reports. No community can appreciate either the virtues or defects of its school system until it has the comparative figures

which show how the local system ranks with others of like size. In the second place the report is an example of scientific study of education. Facts are here presented which cannot be overthrown by mere prejudices. Baltimore must face squarely the inadequacy of her educational budget, the inadequacy of her sanitary arrangements, the absence of any progressive social movements for the larger use of her school plant, the inadequacy of her provision for supervision. It is great wisdom to face facts of this kind frankly and openly. When the value of such impartial examinations is fully realized we shall undoubtedly see many schools examining themselves in a similar manner.

The Example of New York

New York City is giving another example to the educational world of scientific study of school affairs. The financial authorities of New York have initiated an inquiry into the efficiency of the educational system of that city. Professor Hanus of the Department of Education of Harvard has taken a leave of absence for a year from the work of his department to carry on this investigation. As in Baltimore so also in New York practical interests of a complicated character are at stake. The educational world will note with profound interest the development of the New York investigation. The interest which will attach to this inquiry will not be limited, however, to the immediate issues which it raises or settles. The matter of largest importance to the history of education is the method of scientific investigation which is at once illustrated and cultivated by such an investigation. The student of the science of education notes these studies of school efficiency with satisfaction. They mark the opening of a new and productive attitude toward school problems.

BOOK REVIEWS

A Cyclopedia of Education. Edited by PAUL MONROE, with the assistance of Departmental Editors, etc. Vol. I. New York: Macmillan, 1911.

It would be difficult to overestimate the importance of this first *Cyclopedia of Education* in English. This is true either from a consideration of the need of such a work or of the manner in which it is being carried out. The editor, in the preface to the first volume, gives as evidence of the need the "vast and varied character of educational literature," "the growing importance of the school as a social factor," and "the great numerical strength of the teaching profession, and its rapidly changing personnel." The *Cyclopedia* will serve as a unifier of the varied literature, and as an introduction and guide to its further study; it will be a means of acquainting the general public with the school and its problems; and it will prove an indispensable instrument for the advancement of the teachers in their professional equipment.

That the work will be efficiently carried out is guaranteed by the character of its editors. The editor-in-chief, Professor Monroe, is well known as the chief authority in the history of education in America. Each of the departmental editors is well known in his field as may be seen from a glance at their names: Elmer E. Brown, Edward F. Buchner, William H. Burnham, Gabriel Compayré, Ellwood P. Cubberley, John Dewey, Charles H. Judd, Arthur F. Leach, Will S. Monroe, J. E. G. de Montmorency, Wilhelm Münch, David Snedden, Henry Suzzallo, and Foster Watson. These are asisted by over one thousand individual contributors, many of whom are themselves eminent. The general scholarly standing of the work leaves nothing to be desired.

The *Cyclopedia* aims to treat of all of the topics which are in any way connected with education in any of its branches. Topics of historical importance include a discussion of types of schools, such as the Abbey Schools, or individual schools, as Abbotsholme; an account of prominent educators, as Abelard; of educational devices or methods, as the Abacus or the A-B-C method. Besides this, many other topics are treated historically—such, for example, as arithmetic. Another type of topic treats of the philosophy of education, as Adaptation, or of educational psychology, as Attention or Adolescence. Administration is treated in Accredited Schools and similar topics. The use of the book not merely as a work of reference, but also as a collection of systematic treatises on such topics as these, is facilitated by a full system of cross references. This plan is still further carried out by listing the main subtopics under the general topic as a heading. Thus, by turning to the title Administration one is referred to a series of articles which together give a systematic treatment of this subject.

Another type of discussion which is of great value in bringing together a large mass of scattered information is the description of current educational systems and organizations. Thus the education in each country in the civilized world, each state and important city in the United States is presented. Also each prominent university in the world is described. One function of the *Cyclopedia* is to serve as a dictionary of

educational terms, including foreign words. For example, in the first volume are defined Anschauung, Arbiturientenprüfung, and Aggregation. One article which should prove very convenient consists in a list of educational bibliographies under the title Bibliography.

The only criticisms to be offered of the work refer to details rather than to its general plan or character. The most obvious type of question in the mind of the reviewer of a cyclopedia is in regard to the proportion in the treatment of various topics. It is recognized also, of course, that this is one of the most difficult problems of the editors on account of the great number and variety of the contributors. A few examples may be given, however, which indicate rather glaring inequality of treatment. Arithmetic, for example, is given four pages, while Archaeology is given eleven pages, School Architecture (together with the allied subject of Blackboards), eighteen pages, and Architectural Education, six pages. Some other contrasts are Apprenticeship and Education, twelve pages, and Aptitude, less than one-half of a page; Athletics, eighteen pages; Backward Pupils, one-sixth of a page; Alcuin, less than one and one-half pages; Chesterfield, three pages. One and one-half pages are given to a historical curiosity, the Boy Bishop. Not only are some of the articles too detailed and technical for their purpose, but some of the bibliographies would be a better guide to the reader of such a work if they were shorter and more selective. For example, the article on Botanical Gardens gives thirty-seven titles in the bibliography and Archaeology sixty-one titles.

The reviewer noticed the omission of three names from the list of contributors: C. S. G., author of Botanical Gardens; S. M. L., author of Childhood; and A. F. C., author of Children, Criminality in. As these cases were discovered at random, there are doubtless others. Only two misprints were noticed. In general, the mechanical features of the book are excellent.

In conclusion, it may be said that no public or educational library can afford to be without this cyclopedia, and everybody in any way connected with education should have it at his disposal.

FRANK N. FREEMAN

THE UNIVERSITY OF CHICAGO

BOOKS RECEIVED

AMERICAN BOOK CO., NEW YORK

English Composition. Book I. By STRATTON D. BROOKS. Cloth. Pp. 294. $0.75.

Essentials of Biology. By GEORGE WILLIAM HUNTER. Cloth. Illustrated. Pp. 448. $1.25.

Elements of Geology. By ELIOT BLACKWELDER AND HARLAN H. BARROWS. Cloth. Illustrated. Pp. 475. $1.40.

Ekkehard—Audifax und Hadumoth. By JOSEPH VICTOR VON SCHEFFEL. Edited by CHARLES HART HANDSCHIN AND WILLIAM F. LUEBKE. Cloth. Pp. 251. $0.60.

How the World Is Housed. By FRANK GEORGE CARPENTER. Cloth. Illustrated. Pp. 352. $0.60.

Makers and Defenders of America. By ANNA ELIZABETH FOOTE. Cloth. Illustrated. Pp. 342. $0.60.

The Story of Modern France. By H. A. GUERBER. Cloth. Illustrated. Pp. 350. $0.65.

Laboratory Manual in Biology. By RICHARD W. SHARPE. Cloth. Illustrated. Pp. 353. $0.75.

School Hymnal. By HOLLIS DANN. Cloth. Pp. 191. $0.50.

A Language Series. Book II. By ROBERT C. METCALF AND AUGUSTINE L. RAFTER. Cloth. Illustrated. Pp. 365. $0.60.

Argumentation and Debate. By JOSEPH VILLIERS DENNEY. Cloth. Pp. 400. $1.25.

Old Testament Narratives. By EDWARD CHAUNCEY BALDWIN. Cloth. Maps. Pp. 192. $0.20.

Don Quixote for Young People. By JAMES BALDWIN. Cloth. Illustrated. Pp. 287. $0.50.

Les origines de la France contemporaine. By H. A. TAINE. Edited by J. F. L. RASCHEN. Cloth. Pp. 272. $0.60.

Historical Reader. By HORACE L. BRITTAIN AND JAMES G. HARRIS. Cloth. Pp. 266. $0.75.

Molière: Les femmes savantes. By CHARLES A. EGGERT. Cloth. Pp. 187. $0.40.

First Year Algebra. By WILLIAM J. MILNE. Cloth. Pp. 321. $0.85.

Inland Voyage and Travels with a Donkey. By GILBERT SYKES BLAKELY. Cloth. Pp. 303. $0.40.

History of American Literature. By REUBEN POST HALLECK. Illustrated. Cloth. Pp. 432. $1.25.

The Eleanor Smith Music Primer. By ELEANOR SMITH. Cloth. Pp. 128. $0.25.

Horace: Satires and Epistles. By EDWARD P. MORRIS. Cloth. Pp. 493. $1.25.

D. APPLETON & CO.

A History of the United States. By ANDREW C. MCLAUGHLIN AND CLAUDE HALSTEAD VAN TYNE. Cloth. Pp. 430.

FORBES & CO., CHICAGO

Truths. Talks with a Boy concerning Himself. By E. B. LOWRY, M.D. Cloth. Pp. 95. $0.50.

GINN & CO., BOSTON

The Quest of the Four-Leaved Clover. Adapted from the French of Laboulaye's "Abdullah," by WALTER TAYLOR FIELD. Cloth. Illustrated. Pp. 209. $0.40.

Education as Growth; or the Culture of Character. By L. H. JONES. Cloth. Pp. 275.

Barbarian and Noble. By MARION FLORENCE LANSING. Cloth. Pp. 183. $0.35.

GOVERNMENT PRINTING OFFICE, WASHINGTON

Annual Report of the Board of Regents of the Smithsonian Institution. Cloth. Illustrated. Pp. 751.

GUNTHORP-WARREN CO., CHICAGO

The Social Evil in Chicago: A Study of Existing Conditions, with Recommendations by the Vice Commission of Chicago. Paper. Illustrated. Pp. 358.

HOUGHTON MIFFLIN CO., BOSTON

The Story of the Roman People. By EVA MARCH TAPPAN. Cloth. Illustrated. Pp. 251. $0.65.

The Night Before Thanksgiving, A White Heron, and Selected Stories. By SARAH ORNE JEWETT. Cloth. Pp. 119. $0.25.

Children's Classics in Dramatic Form. Book I. By AUGUSTA STEVENSON. Cloth. Illustrated by CLARA E. ATWOOD. Pp. 116. $0.30.

Teaching Poetry in the Grades. By MARGARET W. HALIBURTON AND AGNES G. SMITH. Cloth. Pp. 116. $0.60.

Primer. By JAMES H. VAN SICKLE AND WILHELMINA SEEGMILLER. Cloth. Pp. 128. $0.30.

First Reader. By JAMES H. VAN SICKLE AND WILHELMINA SEEGMILLER. Cloth. Pp. 128. $0.35.

B. F. JOHNSON PUBLISHING CO., RICHMOND

Elementary Algebra. By JOHN M. COLAW AND JAMES K. POWERS. Cloth. Pp. 344. $0.90

Fifty Famous Fables. By LIDA BROWN MCMURRY. Cloth. Illustrated. Pp. 126. $0.30.

LITTLE, BROWN & CO.

Fanciful Flower Tales. By MADGE A. BIGHAM. Cloth. Pp. 162. Illustrated. $0.50.

Smoky Days' Wigwam Evenings. By CHARLES A. EASTMAN AND ELAINE GOODALE EASTMAN. Illustrated. Cloth. Pp. 148. $0.60.

Children of History. By MARY S. HANCOCK. Cloth. Pp. 142. Illustrated. $0.50.

CURRENT EDUCATIONAL LITERATURE IN THE PERIODICALS[1]

IRENE WARREN
Librarian, School of Education, The University of Chicago

ABERDEEN, THE COUNTESS OF. The woman's national health association of Ireland and infant welfare. Child 1:759–72. (Je. '11.)

ANDREWS, BENJAMIN R. The girl of tomorrow: what the school will do for her. World's Work 22:14526–30. (Je. '11.)

ARNOLD, F. S. Thomas Arnold of Rugby. Child 1:711–14. (My. '11.)

BALDWIN, BIRD T. The psychology of mental deficiency. Pop. Sci. Mo. 79:82–93. (Jl. '11.)

BARKER, D. WILSON. The Thames nautical training college, H.M.S. "Worcester." Child 1:715–22. (My. '11.)

BERGENGREN, RALPH. Free dentistry for poor children. Tech. World M. 15:664–66. (Ag. '11.)

BETZ, W. College entrance requirements in modern languages. School R. 19:406–9. (Je. '11.)

BIGELOW, MARGUERITE OGDEN. The girl of tomorrow and her education. Craftsman 20:241–49. (Je. '11.)

BILLIARDE, F. J. Winnipeg and the child welfare exhibit. Child 1:845–58. (Jl. '11.)

BISHOP, J. REMSEN. The poor results in Latin teaching. Educa. R. 41:489–98. (My. '11.)

BLAYNEY, THOMAS LINDSEY. The modern languages as cultural college disciplines. Educa. R. 41:478–88. (My. '11.)

BRIDGE, JOHN C. The Dunfermline school clinic. Child 1:680–86. (My. '11.)

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[1] *Abbreviations.*—Amer. Physical Educa. Rev., American Physical Education Review; Atlan., Atlantic; Cent., Century; Chaut., Chautauquan; Educa., Education; Educa. Bi-mo., Educational Bi-monthly; Educa. R., Educational Review; Educa. T., Educational Times; Journ. of Educa. (Bost.), Journal of Education (Boston); Journ. of Educa. Psychol., Journal of Educational Psychology; Kind. Mag., Kindergarten Magazine; Lit. D., Literary Digest; Liv. Age, Living Age; Nature Study Rev., Nature Study Review; Out., Outlook; Pedagog. Sem., Pedagogical Seminary; Pop. Sci. Mo., Popular Science Monthly; Psychol. Clinic, Psychological Clinic; Pub. Lib., Public Libraries; Relig. Educa., Religious Education; R. of Rs., Review of Reviews; School R., School Review; School W., School World; Tech. World M., Technical World Magazine.

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